

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 07 27 00.02 - Air Barriers - Performance
- .2 Section 08 11 00 - Metal Doors and Frames
- .3 Section 08 50 00 - Windows

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM A 123/A 123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A 653/A 653M-09a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .3 ASTM C 1396/C 1396M-09a, Standard Specification for Gypsum Board.
 - .4 ASTM D 1761-06, Standard Test Methods for Mechanical Fasteners in Wood.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
 - .2 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction and amendment.
- .3 CSA International
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CSA O112 Series-M1977(R2006), CSA Standards for Wood Adhesives.
 - .3 CSA O121-08, Douglas Fir Plywood.
 - .4 CAN/CSA O122-06, Structural Glued-Laminated Timber.
 - .5 CSA O141-05(R2009), Softwood Lumber.
 - .6 CSA O151-09, Canadian Softwood Plywood.
 - .7 CSA O153-M1980(R2008), Poplar Plywood.
 - .8 CSA O325-07, Construction Sheathing.
 - .9 CSA 080 Series, Wood Preservation.
- .4 Forest Stewardship Council (FSC)
 - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
 - .2 FSC-STD-20-002-2004, Structure and Content of Forest Stewardship Standards V2-1
 - .3 FSC Accredited Certified Bodies.
- .4 National Lumber Grades Authority (NLGA)
- .5 Standard Grading Rules for Canadian Lumber 2007.

- .6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for wood products and accessories and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 For products treated with preservative by vacuum-pressure impregnation submit following information certified by authorized signing officer of treatment plant:
 - .3 Information listed in AWP.M2 and revisions specified in CAN/CSA-080 Series, Supplementary Requirement to AWP Standard M2 applicable to specified treatment.
 - .4 Moisture content after drying following treatment with water-borne preservative.
- .5 Construction Waste Management:
 - .1 Submit project Waste Management Plan, Waste Reduction Work Plan highlighting recycling and salvage requirements in accordance with Section 01 74 19.
 - .2 Low-Emitting Materials:
 - .1 Submit listing of adhesives and sealants and paints and coatings used in building, showing compliance with VOC and chemical component limits or restriction requirements.
 - .2 Submit listing of composite wood products used in building, stating that they contain no added urea-formaldehyde resins, and laminate adhesives used in building, stating that they contain no urea-formaldehyde.

1.4 QUALITY ASSURANCE

- .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood, and wood based composite panels in accordance with CSA and ANSI standards.
- .3 Sustainable Standards Certification:
 - .1 Certified Wood: submit listing of wood products and materials used in accordance with FSC-STD-01-001.

1.5 DELIVERY,

- .1 Deliver, store and handle materials in accordance with Section

STORAGE AND
HANDLING

01 61 00 - Common Product Requirements and with manufacturer's written instructions.

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labeled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect wood from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan Waste Reduction Workplan related to Work of this Section in accordance with Section 01 74 19.
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan Waste Reduction Workplan in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 FRAMING
STRUCTURAL AND
PANEL MATERIALS

- .1 Description:
 - .1 Sustainability Characteristics:
 - .2 Plywood DFP to CSA 0121, urea-formaldehyde free, FSC Certified – 12.5 mm, standard construction for walls, 15.9 mm for sloped portions of canopies where framing is at maximum 600 mm on centre.
- .2 Lumber: softwood, S4S, kiln dried moisture content 15% or less in accordance with following standards:
 - .1 CSA O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .3 Glued end-jointed finger-jointed lumber is not acceptable.
- .4 Framing and board lumber: in accordance with NBC.
- .5 Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing and sleepers:

- .6 Board sizes: "Standard" or better grade.
- .7 Dimension sizes: "Standard" light framing or better grade.
- .8 Post and timbers sizes: "Standard" or better grade.
- .9 Gypsum sheathing: to ASTM C 1396/C 1396M.

2.2 ACCESSORIES

- .1 Polyethylene film: to CAN/CGSB-51.34 M86, .015mm thick.
- .2 Sealing Tape: Minimum 60mm width, UV resistant poly propylene sheathing tape with acrylic adhesive, CCMC approved.
- .3 Air seal: closed cell polyurethane or polyethylene.
- .4 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
 - .1 Sealants: VOC limit 250 g/L maximum to SCAQMD Rule 1168.
- .5 Sill gaskets: closed cell vinyl foam, with moisture-resistant properties.
 - .1 Adhesives: VOC limit 120 g/L maximum to SCAQMD Rule 1168 GS-36.
- .6 General purpose adhesive: to CSA O112 Series.
 - .1 VOC limit 200 g/L maximum to SCAQMD Rule 1168 GS-36.
- .7 Nails, spikes and staples: to CSA B111. Hot dipped galvanized finish to ASTM – 153.
- .8 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers. Hot sipped galvanized finish.
- .9 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.
- .10 Joist hangers: minimum 1 mm thick sheet steel, galvanized ZF001 coating designation.
- .11 Nailing discs: flat caps, minimum 25 mm diameter, minimum 0.4 mm thick, sheet metal, fibre, formed to prevent dishing. Bell or cup shapes not acceptable.
- .12 Fastener Finishes:

- .1 Galvanizing: to ASTM A 123/A 123M ASTM A 653, use galvanized fasteners for exterior work, interior highly humid areas, pressure-preservative fire-retardant treated lumber.
- .2 Stainless steel: use stainless steel for pressure treated lumber blocking.

.13 Wood Preservative:

- .1 Preservative Coating: in accordance with manufacturer's recommendations for surface conditions:
 - .1 Preservative: VOC limit 350 g/L maximum to SCAQMD Rule 1113.
 - .2 Coatings: VOC limit 350 g/L maximum to SCAQMD Rule 1113.

2.3 PRESERVATIVE TREATMENT

- .1 Treat following items in accordance with applicable CAN/CSA 080 commodity standard using alkaline copper quat type C (ACQ-C) or copper azole type B (CA-B) preservative to obtain minimum net retention of 4.0 kg/m³ of wood. Materials to be kiln-dried after treatment.
 - .1 All dimension lumber and panel materials directly exposed to moisture (ie. Canopies and overhang framing, and similar)
- .2 Treat following items in accordance with applicable CAN/CSA 080 commodity standard using "Advance Guard" borate-pressure treatment to obtain minimum net retention of 2.7 kg/m³ of wood. Materials to be kiln-dried after treatment. Lumber shall carry the Canadian Wood Preserver's Bureau Quality Mark ("Advance Guard" quality mark).
 - .1 New lumber and panel materials inside, outside and crossing the wall moisture barrier.
 - .2 Items in contact with concrete or masonry.
 - .3 Furring, blocking, strapping, etc. for rain screen cavity provisions.
 - .4 Lumber/trim in Clause 2.1.3.
- .3 Inspection of products treated with preservative by vacuum-pressure impregnation will be carried out by an accredited inspection agency of the Canadian Wood Preservers Bureau (CWPB).
- .4 All treated lumber and plywood shall bear an identifying stamp in accordance with the CWPB, CSA 080 or AWPB requirements.
- .5 Following water-borne preservative treatment, dry material to maximum moisture content of 15%.
- .6 Surfaces exposed in preservative treated materials by cutting, trimming or boring must be field treated.

- .7 Field applied wood preservative:
 - .1 For ACQ or CA preservative wood: Organic solvent, copper naphthenate, prepared in accordance with CSA O80.15, coloured green.
 - .2 For borate preservative wood: Water-based, borate-based, prepared in accordance with CSA O80.15, tint green.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

- .1 Treat surfaces of material with wood preservative, before installation.
- .2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and one minute soak on plywood.
- .3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.3 MATERIAL USAGE

- .1 Exterior wall sheathing:
 - .1 Plywood, DFP sheathing grade O, square edge, 12.5 mm thick, preservative treated.

3.4 INSTALLATION

- .1 Install members true to line, levels and elevations, square and plumb.
- .2 Construct continuous members from pieces of longest practical length.
- .3 Install spanning members with "crown-edge" up.
- .4 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding electrical equipment mounting boards, and other work as required.

- .5 Install roof and wall sheathing in accordance with requirements of the National Building Code except as follows:
 - .1 Install wall sheathing with panel end joints located on solid bearing, staggered at least 800 mm.
 - .2 Fasten wall sheathing panels spaced 150 mm O.C. along edges and 300 mm O.C. along intermediate supports. Use of staples is not acceptable.
- .6 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .7 Install curbs and other wood supports as required and secure using galvanized fasteners.
- .8 Use dust collectors and high quality respirator masks when cutting or sanding wood panels.
- .9 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .10 Countersink bolts where necessary to provide clearance for other work.
- .11 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.
- .12 Install foam sill gaskets between wood and concrete.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Clean Work area on an ongoing basis during workday to eliminate risk of foreign object debris (FOD).
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 PROTECTION

- .1 Protect installed products and components from damage during construction.

- .2 Repair damage to adjacent materials caused by rough carpentry installation.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

- .1 FRP Column Covers.
- .2 Anchors and supports.

1.2 RELATED SECTIONS

- .1 Section 06 10 00 - Rough Carpentry..
- .2 Section 07 27 00.02 Air Barriers- Performance.
- .3 Section 07 46 13 – Preformed Metal Siding
- .4 Section 06 10 00 - Rough Carpentry: Wood framing and blocking.
- .5 Section 07 92 00 – Sealants

1.3 REFERENCES

- .1 ASTM D 638 - Test Method for Tensile Properties of Plastics.
- .2 ASTM D 695 - Test Method for Compressive Properties of Rigid Plastics.
- .3 ASTM D 790 - Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics.
- .4 ASTM D 570 - Test Method for Water Absorption of Plastics.
- .5 ASTM D 2583 - Test Methods for Barcol Hardness of Rigid Plastics.
- .6 ASTM E 84 - Surface Burning Characteristics of Building Materials.
- .7 AISI SG-937 - Specifications for the Design Cold-Formed Steel Structural Members.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- .1 Design FRP fabrications to withstand the positive and negative wind loads as calculated in accordance with the applicable building code.
- .2 Suspension System Design: Design support and suspension system components and assemblies in accordance with AISI "Specifications for the Design Cold-Formed Steel Structural Members".
- .3 Tolerances. Finished surfaces shall not vary more than 3 mm in 3000 mm tested with a straight edge and shall be free from cracks, pits, chips, voids, depressions, bumps, ridges waves, scratches, discoloration or other defacements.

1.5 SUBMITTALS

- .1 Submit under provisions of Section 01 30 00.
- .2 Product Data: Manufacturer's data sheets on each product to be used, including:
 - .1 Preparation instructions and recommendations.
 - .2 Storage and handling requirements and recommendations.
 - .3 Installation methods.
- .3 Shop Drawings: Submit sections and elevations of systems specified. Show location of units, suspension grid members, other items of work and related work of other Sections to be coordinated with the system. Show details including shapes, thickness, reinforcing, bracing, stiffeners, suspension and anchoring inserts, and finishes.
 - .1 Show sequence of erection.
- .4 Selection Samples: Submit 3 sets of 254 mm square samples for each different finish required for approval by Departmental Representative. Each set of samples shall show full range of color and texture to be expected in the completed work. One of each approved item will be returned to manufacturer for production verification.
- .5 Verification Samples: For each finish product specified, two samples, minimum size 254 mm square, representing actual product, color, and patterns.
- .6 Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Manufacturer shall have not less than 10 years successful experience in producing the type of prefabricated components required for project applications equivalent to the requirements for this project.
- .2 Installer Qualifications: Installer shall have a minimum of 5 years experience with the type of prefabricated components specified and shall be approved by the manufacturer.
- .3 Mock-Up: Provide a mock-up for evaluation of installation techniques and workmanship.
 - .1 Maintain mock-up during construction for workmanship comparison.
 - .1 Incorporate mock-up into final construction upon Departmental Representative's approval.
 - .2 Obtain Departmental Representative's acceptance of materials and workmanship standard.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Store products in manufacturer's unopened packaging until ready for installation. Store on dunnage within stacking heights permitted by the manufacturer and protected from warping and damage in accordance with Section 01 61 00
- .2 Exercise care in handling and protect all materials and finishes during storage, and erection as necessary to prevent damage to the finished surfaces.
- .3 Remove and replace all units and components, which are cracked, bent, chipped, scratched, or otherwise unsuitable for installation.
- .4 Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 PROJECT CONDITIONS

- .1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

2 PRODUCTS

2.1 MATERIALS

- .1 FRP Material Specifications
 - .1 Physical Properties: Must meet or exceed the requirements of ASTM D 790.
 - .2 Polyester resin shall be equal to Reichold products GP resins.
 - .3 Surface gelcoat to be equal to Ashland / Max Guard products.
 - .4 Fire retardant rating material must meet or exceed the requirements of ASTM E 84 tunnel test.
- .2 CI Glass Reinforced Laminate Material Specifications
 - .1 Properties Test Procedure:
 - .1 Mat Laminate Flexural Strength at 25 C, 137895 N/m² when tested in accordance with ASTM D 790.
 - .2 Flexural Modulus at 25 C at 110.34 N/m² when tested in accordance with ASTM D 790.
 - .3 Tensile Strength at 25 C, 124105 N/m² when tested in accordance with ASTM D 638.

- .4 Compressive Strength at 25 C Edgewise, 117210 N/ m2 per ASTM D 695.
- .5 24 Hr. Water Absorption at 25 C: 0.05 percent change in weight when tested in accordance with ASTM D 570.
- .6 Barcol Hardness 55-65 when tested in accordance with ASTM D 2583.
- .7 Glass content, 30 percent.
- .3 Finishes: Provide integrally coloured units with an approved texture for a consistent appearance to match the architectural requirements. Color and surface finish and texture shall be as follows:
 - .1 Colour:
 - .1 Colour shall be a custom colour as selected by the Departmental Representative.
 - .2 Finish:
 - .1 Flat.

2.2 FRP COLUMN COVERS

- .1 Rectangular Column:
 - .1 Size: Approx. 4370 mm high divided equally in three sections , base 450 mm x 195 mm. Refer to Architectural Details
 - .2 Flat panels on either side of column between overhead doors; Refer to Architectural Details.

2.3 ACCESSORIES

- .1 Screws and Anchors: Stainless Steel.
- .2 Clips and Inserts: Provide stainless steel threaded inserts, internal reinforcements, stiffeners and steel connection devices incorporated into units. Embed inserts and stiffeners in reinforced fibreglass.
- .3 Sealant: as recommended by manufacturer, and compatible with adjoining materials.
- .4 Additional bonding and finishing materials shall be provided as recommended by the manufacturer.

2.4 FABRICATION

- .1 Prior to fabrication verify, by measurement at the Project Site, all dimensions affecting work of this section.
- .2 Fabricate materials of the required size and thickness to produce adequate strength and durability in the finished product and for the intended use. Work to the dimensions shown or accepted on the shop drawings using proven details of fabrication and support.
- .3 Thickness of FRP Parts: Nominal total thickness is 4.8 mm to 6.3 mm including gelcoat. Maximum thickness is 6.3 mm or as specified in approved shop drawings. Gelcoat thickness is 0.38 mm to 0.64 mm.
- .4 Remove all units and components that are cracked, bent, chipped, scratched, or otherwise unsuitable for installation and replace with new, approved items.

3 EXECUTION

3.1 EXAMINATION

- .1 Before beginning installation verify that conditions of previously installed work under other sections is acceptable for installation of FRP columns.
- .2 Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to installer. Notify Departmental Representative of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- .1 Prepare substrates for connection devices carefully, using approved shop drawings provided by manufacturer.
- .2 Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to installer.

3.3 INSTALLATION

- .1 Install in accordance with manufacturer's instructions.
- .2 Use tools and hardware provided by or approved by manufacturer.
- .3 Connect FRP components in accordance with approved shop drawings. Use only stainless steel fasteners permitted for use in all connections.

- .4 Secure individual units as indicated, accurately fitted true to line and slopes as indicated and required for proper alignment with adjacent work.
- .5 After FRP fabrications have been installed in final location, make final adjustments to assure proper alignment.
- .6 Caulk joints as indicated in the approved shop drawings.

3.4 CLEAN-UP AND PROTECTION

- .1 Clean surfaces of FRP fabrications; comply with manufacturer's instructions, in accordance with Section 01 74 11
- .2 Repair or replace fabrications damaged during installation.
- .3 Protect fabrications from damage or deterioration until acceptance of the work. Touch-up, repair or replace damaged products before Substantial Completion.
- .4 Clean and properly dispose of materials and debris in accordance with Section 01 74 19

END OF SECTION